

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application.

### **Listing of claims:**

1. (previously presented) A method for detecting a property of at least one layer of a pavement, including:
  - measuring, in a position above said pavement, at least one flux of radiation received from said pavement and energy levels or at least one range within an energy spectrum of said radiation, said measured radiation including  $\gamma$ -radiation emitted by at least one radio nuclide in or under said pavement; and
  - determining information regarding said property from said at least one measured flux and energy levels or at least one range within the energy spectrum of said  $\gamma$ -radiation and predetermined reference data for providing a relationship between at least one flux of  $\gamma$ -radiation of predetermined energy levels or in at least one predetermined energy range and said property.
2. (original) A method according to claim 1, wherein at least one  $\gamma$ -radiation contribution or concentration of at least one individual radio nuclide is determined from said at least one measured flux and energy levels or at least one range within an energy spectrum of said  $\gamma$ -radiation and from said reference data.
3. (original) A method according to claim 2, wherein the radio nuclide is from a group consisting of  $^{40}\text{K}$ ,  $^{232}\text{Th}$ ,  $^{238}\text{U}$  and decay products of these radionuclides.
4. (previously presented) A method according to claim 2, wherein  $\gamma$ -radiation contributions or concentrations of a plurality of individual radio nuclides are determined.
5. (previously presented) A method according to claim 2, wherein said at least one  $\gamma$ -radiation contribution or concentration is determined by analyzing the energy spectrum of said measured  $\gamma$ -radiation, said reference data including at least one reference spectrum of a reference concentration of an individual radio nuclide.
6. (previously presented) A method according to claim 1, wherein said property is the thickness of said at least one layer.

7. (original) A method according to claim 6, wherein said thickness is determined from a difference between the at least one measured flux and at least one reference value for said at least one flux, said at least one reference value being associated to a particular thickness.

8. (previously presented) A method according to claim 1, wherein said property is the composition of said at least one layer.

9. (previously presented) A method according to claim 1, wherein said information is determined by analyzing the spectrum of said measured radiation and comparing said spectrum with at least one reference spectrum for a pavement compound or constituent.

10. (previously presented) A system for detecting a property of a pavement, said system comprising:

- a radiation detector for measuring, in a position above said pavement, at least one flux of radiation received from said pavement and energy levels or at least one range within an energy spectrum of said radiation, said measured radiation including  $\gamma$ -radiation emitted by at least one radio nuclide in or under said pavement;

- a signal processing structure for receiving from said detector a signal representing said at least one measured flux and energy levels or at least one energy range of said measured  $\gamma$ -radiation and for determining information regarding said property from said signal and predetermined reference data for providing a relationship between at least one flux of  $\gamma$ -radiation of predetermined energy levels or in at least one predetermined energy range and said property; and

- an interface for outputting data representing said property.

11. (previously presented) A computer system comprising:

- an interface for inputting data representing at least one measured flux of  $\gamma$ -radiation emitted by at least one radio nuclide in or under a pavement and associated energy levels or at least one associated range within an energy spectrum of said radiation;

- a database containing reference data for providing a relationship between at least one flux of  $\gamma$ -radiation of predetermined energy levels or in at least one predetermined energy range and said property;

- instructions for determining information regarding said property from said reference data in said database and said inputted data; and

- an interface for outputting data representing said property.

12. (currently amended) A computer program on a computer-readable medium for use in a method for detecting a property of at least one layer of a pavement, including:

instructions for reading inputted data representing at least one measured flux of  $\gamma$ -radiation emitted by at least one radio nuclide in or under a pavement and associated energy levels or at least one associated range within an energy spectrum of said radiation;

a database containing reference data for providing a relationship between at least one flux of  $\gamma$ -radiation of predetermined energy levels or in at least one predetermined energy range and a property of at least one layer of a pavement from which said  $\gamma$ -radiation is received; and

instructions for determining information regarding said property from said reference data in said database and said inputted data.

13. (original) A data carrier device including data representing a computer program according to claim 12.

14. (previously presented) A method according to claim 3, wherein  $\gamma$ -radiation contributions or concentrations of a plurality of individual radio nuclides are determined.

15. (previously presented) A method according to claim 3, wherein said at least one  $\gamma$ -radiation contribution or concentration is determined by analyzing the energy spectrum of said measured  $\gamma$ -radiation, said reference data including at least one reference spectrum of a reference concentration of an individual radio nuclide.

16. (previously presented) A method according to claim 4, wherein said at least one  $\gamma$ -radiation contribution or concentration is determined by analyzing the energy spectrum of said measured  $\gamma$ -radiation, said reference data including at least one reference spectrum of a reference concentration of an individual radio nuclide.

17. (previously presented) A method according to claim 8, wherein said composition is determined by analyzing the spectrum of said measured radiation and comparing said spectrum with at least one reference spectrum for a pavement compound or constituent.